

# RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: 4th

Wisconsin Department of Transportation  
DT1241 2009

Research, Development and Technology Transfer	
<b>Program:</b> (Choose One) <input type="checkbox"/> Policy Research <input type="checkbox"/> Pooled Fund TPF # <input checked="" type="checkbox"/> Wisconsin Highway Research Program <input type="checkbox"/> Other	
<b>Project Title:</b> Effective Depth of Soil Compaction in Relation to Applied Compactive Energy	
<b>Administrative Contact/Phone #:</b> Peg Lafky	<b>WisDOT Project ID(s):</b> 0092-08-11
<b>WisDOT Technical Contact/Phone #:</b> Bob Arndorfer	<b>Other Project ID:</b>
<b>Project Investigator/Phone # (agency &amp; contact):</b> Dante Fratta & Haifang Wen - University of Wisconsin-Madison	<b>Approved Starting Date:</b> 10/10/2007
<b>WisDOT Comments:</b>	<b>Original End Date:</b> 4/10/2009
	<b>Current End Date:</b> 12/31/2009
<b>Sponsor:</b> Wisconsin Department of Transportation	<b>Number of Extensions:</b> 2

## Schedule Status:

- ☒ On schedule ☐ Ahead of schedule  
☐ On revised schedule ☐ Behind schedule (Please explain below)

Total Project Budget	Expenditures Current Quarter	Total Expenditures	% Funds Expended	% Work Completed
\$54,914.00	\$0.00	\$54,914.00	100 %	99%

## Project Description:

The determination of the appropriate lift thicknesses used in embankment construction operations has important economic and engineering implications for the design and construction of roads, levees and dams. For example, small lift thicknesses may cause excessive construction costs while large lift thicknesses may reduce the compaction effectiveness and compromise the integrity of the embankment. This research proposal uses experimental results and numerical analyses to evaluate the effective depth of compaction. These results and analyses provide engineering understanding of the problem and justify recommendations about maximum lift thickness to be used in WisDOT embankment construction projects.

This research program collects field data and develops analyses needed to determine optimum lift thickness for WisDOT embankment construction projects. The results are helping to establish relationships between the applied compaction energy and the level of compaction achieved at increasing depths for a number of different soils. The data, analyses, and correlations will help WisDOT officials in proposing possible revisions to current constructions specifications including the need to change the established 8-in lift thickness in the construction of compacted embankments. The successful completion of this research will also help WisDOT officials in improving construction operations by creating more stable and economical subgrade structures.

## Progress This Quarter: (Includes project committee meetings, work plan status, contract status, significant progress, etc.)

During this quarter, the research team met with WisDOT officials, received comments of the draft of the final report from TOC members, and presented the final report to the TOC during the December 2009 meeting (the Power Point presentation files is attached). The research team also worked on the draft of two journal manuscripts as part of a recently completed PhD dissertation.

Anticipated Work Next Quarter:

During the next quarter, the research team will prepare tasks for the continuation of the project as a contract addendum. This continuation is expected to begin June 1, 2010.

Circumstances Affecting Progress and/or Budget:

The TOC requested to incorporate the results of the contract addendum part of the project to completed final project report into a single comprehensive report.

Gantt Chart:

Phase Number	24 months							
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5	Quarter 6	Quarter 7	Quarter 8
Phase I								
Phase II								
Phase III								
Phase IV								
Phase V								Complete